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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,116	03/02/2004	Ronald S. Cok	87954AJA	2666

7590

05/05/2005

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EXAMINER
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BARRECA, NICOLE M

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/791,116	<b>Applicant(s)</b> COK, RONALD S.	
	<b>Examiner</b> Nicole M. Barreca	<b>Art Unit</b> 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
     4a) Of the above claim(s) 26-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-30 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/2/05</u> . | 6) <input type="checkbox"/> Other: ____  |

*HL*

### DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-25, drawn to a method of manufacturing a patterned conductive layer, classified in class 430, subclass 105+.
  - II. Claims 26-30, drawn to a patterned conductive layer, classified in class 428, subclass 209.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by a different material such as by placing a mask over the substrate, then slurry or spray coat the conductive coating onto the masked substrate. Let stand until the coating is semicured or cured then remove the mask. The process as claimed can be used to make a different product such as a decorative artwork.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Atty: Andrew Anderson on March 18, 2005 a provisional election was made with traverse to prosecute the invention of group I, claims 1-25 (to Examiner Cathy Lam). Affirmation of this election must be made by

applicant in replying to this Office action. Claims 26-30 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 9-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (US 2004/0169281) in view of Sirringhauss (US 2004/0266207).

7. A layer of nanotubes 104 comprising carbon is deposited on catalytic seed layer 102 on substrate 100. Opening 106 is formed by depositing a resist, such as a photoresist 108 on the layer of nanotubes 104. The photoresist 108 is patterned using conventional techniques and the layer of nanotubes is etched using the photoresist as a mask. Conductive material 110 is deposited in the opening [0020]. The substrate layer 100 may be a semiconductor layer or a conductive layer. The seed layer may be a layer of a transition metal or combination of transition metals. The seed layer nucleates the growth of the layer of nanotubes 104 and partially migrates into or throughout the nanotubes [0021]-[0025]. Nguyen discloses a single nanotube and photoresist layer and does disclose using a plurality of layers. However one of ordinary skill in the art would recognize that any number of layers and patterns could be used in the manufacturing method, as was needed to fulfill the final product requirements.

8. Nguyen does not disclose that the manufacturing process is continuously, with the substrate moving. Sirringhauss teaches that high throughput at low cost is achieved when a continuous sheet of flexible substrate is moved through a series of processing stations [0078]. It would have been obvious to one of ordinary skill in the art to have the manufacturing process of Ngyuen be a continuous manufacturing process with a moving substrate because Sirringhauss teaches that high throughput at low cost is achieved when a continuous sheet of flexible substrate is moved through a series of processing stations.

9. Claims 7-8, 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen in view of Sirringhauss as applied to claim 1 above, and further in view of Wakamoto (US 6,455,214).

10. Nguyen uses the patterned nanotubes in the manufacture of a semiconductor device and does not disclose forming a display device, such as a flat panel or touch screen. Wakamoto teaches that conventionally semiconductor devices and liquid crystal display devices are manufactured by lithography processes, wherein a photoresist is patterned by exposing it to light through a mask using a projection exposure apparatus. Stationary type and scanning type exposure apparatus are used in the art (col.1, 21-48). It would have been obvious to one of ordinary skill in the art to form a display device instead of a semiconductor in the patterning method of Nguyen in view of Sirringhauss because Wakamoto teaches that conventionally both semiconductors and display devices are manufactured by lithography processes which pattern a photoresist.

**Conclusion**

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamoto (US 6,097,138) discloses a cathode device having emitters made up of carbon nanotubes.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole M. Barreca whose telephone number is 571-272-1379. The examiner can normally be reached on Monday-Thursday (9AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nicole M Barreca  
Examiner  
Art Unit 1756



4/30/05